Amendments to the Claims

This listing of claims will replace all prior versions of claims in the Application.

Listing of Claims

1-11. (Canceled)

12. (Withdrawn) A cartilage repair assembly as claimed in claim 11 wherein said demineralized bone matrix comprises bone powder having a size ranging from 200 to 850 microns and a weight ranging from 1% to 35% of the cartilage mixture.

13. (Withdrawn) A cartilage repair assembly comprising a sterile shaped structure of subchondral bone with an integral overlying cartilage cap, said shaped structure being dimensioned to fit in a drilled bore in a cartilage defect area so that said shaped bone and cartilage cap when centered in the bore does not engage the side wall of the bore in an interference fit, said shaped structure being treated to remove cellular debris and proteoglycans and sterile milled cartilage pieces mixed in a carrier surrounding said bone plug in said bore.

14. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said milled cartilage pieces are sized less than 1 mm.

15. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said cartilage is allograft cartilage.

16. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said cartilage is autologous cartilage.

17. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said shaped structure has a shape taken from a group consisting of a cylinder, an oval, a cruciate, and scallop.

18. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said milled cartilage pieces and carrier includes an additive taken from one or more of a group consisting of growth factors, human allogenic cells, human bone autologous marrow cells, human allogenic bone marrow cells, stem cells, demineralized bone matrix, cartilage, and insulin.

19. (Withdrawn) A cartilage repair assembly as claimed in claim 18 wherein said demineralized bone matrix comprises bone powder having a size ranging from 200 to 850 microns and a weight ranging from 1% to 35% of the cartilage mixture.

20. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said carrier includes a bioabsorbable carrier consisting of one or more of a group consisting of sodium hyaluronate, gelatin, collagen, chitosan, alginate, buffered PBS, Dextran or polymers.

21. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said milled cartilage is hyaline cartilage.

22. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said milled cartilage is fibrocartilage.

23. (Withdrawn) A cartilage repair assembly as claimed in claim 13 wherein said milled cartilage is a mixture of fibrocartilage and hyaline cartilage.

24. (Withdrawn) A cartilage repair assembly comprising a sterile shaped structure of subchondral bone and overlying integral cartilage cap, said shaped structure been dimensioned to fit in a drilled bore in a cartilage defect are so that said shaped bone and hyaline cartilage cap when centered in the bore can be rotated in said bore, said bone plug being treated to remove cellular debris and proteoglycans and sterile milled cartilage pieces mixed in a bioabsorbable carrier surrounding at least a portion of a side wall of shaped structure.

25. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said milled cartilage pieces are sized less than 1 mm.

26. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said cartilage is hyaline allograft cartilage.

27. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said milled cartilage is fibrocartilage.

28. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said milled cartilage is a mixture of fibrocartilage and hyaline cartilage.

29. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said cartilage is autologous cartilage.

30. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said shaped structure has a shape taken from a group consisting of a cylinder, an oval, a cruciate, and scallop.

31. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said milled cartilage pieces and carrier include an additive taken from one or more of a group consisting of growth factor, human allogenic cells, human bone marrow cells, human autologous bone marrow cells, demineralized bone matrix, cartilage, and insulin.

32. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said demineralized bone matrix comprises bone powder having a size ranging from 200 to 850 microns and a weight ranging from 1% to 35% of the cartilage mixture.

33. (Withdrawn) A cartilage repair assembly as claimed in claim 24 wherein said bioabsorbable carrier is one or more of a group consisting of sodium hyaluronate, gelatin, collagen, chitosan, alginate, buffered PBS, Dextran or polymers.

34. (Withdrawn) A cartilage repair assembly kit comprising a sterile shaped structure of allograft subchondral bone and an overlying cartilage cap, said structure being treated to remove cellular debris and proteoglycans and housed in a first sterile container and milled allograft cartilage pieces mixed in a carrier housed in a second sterile container, said first and second sterile containers being packaged together.

35. (Withdrawn) A cartilage repair assembly kit as claimed in claim 34 wherein said cartilage pieces are allograft hyaline cartilage.

36. (Withdrawn) A cartilage repair assembly kit as claimed in claim 34 wherein said carrier includes an additive taken from one or more of a group consisting of growth factors, human allogenic cells, human allogenic bone marrow cells, human autologous bone marrow cells, stem cells, demineralized bone matrix, cartilage, and insulin.

37. (Withdrawn) A cartilage repair assembly kit as claimed in claim 34 wherein said carrier is a bioabsorbable carrier taken from a group consisting of sodium hyaluronate, gelatin, collagen, chitosan, alginate, buffered PBS, Dextran or polymers.

38. (Withdrawn) A method of placing a preshaped allograft implant assembly in a cartilage defect, said assembly comprising a subchondral bone and an overlying cartilage cap plug which has been treated to remove cellular debris and proteoglycans and minced cartilage in a carrier comprising the steps of: (a) drilling a hole in a patient at a site of a cartilage defect, a depth which equal to or less than the length of the bone and cartilage cap plug implant; (b) placing a preshaped osteochondral plug having a cross section which is

less than the cross sectional area of the hole with a length which equal to the depth of the hole allowing the structure to be moveable within said bore in the cylindrical hole; and (c) placing a mixture of minced cartilage in a bioabsorbable carrier in the drilled cylindrical hole around the preshaped osteochondral plug.

39. (Withdrawn) A method as claimed in claim 38 wherein said hole is a cylindrical bore.

40. (Withdrawn) A method as claimed in claim 38 wherein said minced cartilage is allogenic.

41. (Withdrawn) A method as claimed in claim 38 wherein said minced cartilage is autologous.

42. (Withdrawn) A method as claimed in claim 38 wherein said assembly includes an additive consisting of one or more of a group consisting of growth factor, human allogenic cells, human bone marrow cells, demineralized bone matrix, cartilage, and insulin.

43. (Withdrawn) A method as claimed in claim 38 wherein said bioabsorbable carrier is taken from one or more of a group consisting of sodium hyaluronate, gelatin, collagen, chitosan, alginate, buffered PBS, Dextran or polymers.

44-47. (Canceled)

48. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said decellularized allograft osteochondral plug is lyophilized.

49. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim 48, wherein said decellularized allograft osteochondral plug has a water content within a range of about 0.1% to about 8%.

50. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said milled cartilage mixture comprises cartilage ~~particles~~ pieces having a size less than 1 mm.

51. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises sodium hyaluronate.

52. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises gelatin.

53. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises collagen.

54. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises chitosan.

55. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises alginate.

56. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises phosphate buffered saline [PBS] (PBS).

57. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises Dextran.

58. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said biocompatible carrier comprises polymers.

59. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said decellularized plug has a cylindrical shape.

60. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said decellularized allograft osteochondral plug has a diameter in a range of 1 mm to 30 mm.

61. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said decellularized allograft osteochondral plug has a diameter in a range of 4 mm to 10 mm.

62. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said decellularized allograft osteochondral plug has an oval cross-sectional shape.

63. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said decellularized allograft osteochondral plug has a cruciate cross-sectional shape.

64. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said decellularized allograft osteochondral plug has a scalloped cross-sectional shape.

65. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said milled cartilage mixture comprises hyaline cartilage ~~particles~~ pieces.

66. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said milled cartilage mixture comprises fibrocartilage ~~particles~~ pieces.

67. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said milled cartilage mixture comprises fibrocartilage ~~particles~~ pieces and hyaline cartilage ~~particles~~ pieces.

68. (Currently Amended) The ~~improved cartilage repair implant~~ combination of Claim [44,] 69, wherein said milled cartilage mixture comprises growth factors.

69. (New) A combination for repairing a defect in articular cartilage of a human patient, said combination comprising:

a decellularized allograft osteochondral plug having a decellularized subchondral bone base and a decellularized cartilage cap, said decellularized allograft osteochondral plug being formed by a method including the steps of:

(a) harvesting, from a human donor, a non-decellularized osteochondral plug having a non-decellularized subchondral bone base and a non-decellularized cartilage cap; and

(b) treating the non-decellularized osteochondral plug to remove cellular material, chondrocytes, pluripotent mesenchymal cells and proteoglycans therefrom; and

a cartilage mixture including milled allograft cartilage pieces mixed in a biocompatible carrier, said cartilage mixture being positionable in an annular space adjacent said decellularized allograft osteochondral plug, said annular space extending along substantially the entire length of said decellularized allograft osteochondral plug such that said decellularized cartilage cap is spaced from a cartilage layer of the patient and such that said decellularized subchondral bone base is spaced from an adjacent bone layer of the patient, said annular space being sized so as to receive a quantity of said cartilage mixture sufficient for promoting chondrocyte migration into and proliferation within said

decellularized cartilage cap and for enhancing tissue integration between said decellularized subchondral bone base and adjacent patient tissue.

70. (New) The combination of Claim 69, wherein said method for forming said decellularized allograft osteochondral plug further comprises a step of (c) shaping said decellularized allograft osteochondral plug, said step (c) being performed prior to inserting said decellularized allograft osteochondral plug into the bore formed in the cartilage defect area of the patient.

71. (New) The combination of Claim 70, wherein said step (c) includes shaping said decellularized allograft osteochondral plug to have a cross-sectional area that is less than a cross-sectional area of the bore formed in the cartilage defect area of the patient.

72. (New) The combination of Claim 70, wherein said step (c) includes shaping said decellularized allograft osteochondral plug to have a length that is equal to that of the bore formed in the cartilage defect area of the patient.

73. (New) The combination of Claim 70, wherein said step (c) includes shaping said decellularized allograft osteochondral plug to have a length that is greater than that of the bore formed in the cartilage defect area of the patient.

74. (New) The combination of said Claim 69, wherein wherein said method for forming said decellularized allograft osteochondral plug further comprises a step of (c)

freezing said decellularized allograft osteochondral plug, said step (c) being performed after the performance of said step (b).

75. (New) The combination of Claim 69, wherein said milled cartilage mixture includes demineralized bone powder.

76. (New) The combination of Claim 69, wherein the chondrocyte migration into and proliferation within said decellularized allograft osteochondral plug, and the formation of new proteoglycans and other factors producing new cartilage matrix therein are functions of the removal of cellular material, chondrocytes, pluripotent mesenchymal cells and proteoglycans from said decellularized allograft osteochondral plug.

77. (New) The combination of Claim 69, wherein the performance of said step (b) increases the porosity of said decellularized cartilage cap, thereby increasing the space for cells entering said decellularized cartilage cap.

78. (New) The combination of Claim 69, wherein said decellularized cartilage cap is sized and shaped such that it does not touch the patient's cartilage layer that has been exposed as a result of the formation of the bore, and wherein said decellularized subchondral bone base is sized and shaped such that it does not touch the periphery of the patient's bone layer that has been exposed as a result of the formation of the bore.

79. (New) The combination of Claim 69, wherein said decellularized allograft osteochondral plug has an outer periphery having a size and shape selected to allow said

decellularized allograft osteochondral plug to be inserted into a bore formed in a cartilage defect area of a patient, and wherein said annular space has an outer extremity defined by the bore and an inner extremity defined by said outer periphery of said decellularized allograft osteochondral plug.

80. (New) The combination of Claim 79, wherein said inner extremity of said annular space has a first diameter, and said outer extremity of said annular space has a second diameter that is greater than said first diameter.

81. (New) The combination of Claim 79, wherein said outer periphery of said decellularized allograft osteochondral plug has a cylindrical shape.

82. (New) The combination of Claim 79, wherein said outer periphery of said decellularized allograft osteochondral plug has a non-cylindrical shape.

83. (New) The combination of Claim 79, wherein said outer and inner extremities of said annular space cooperate with a bottom surface of the bore to form a containment chamber for said cartilage mixture.

84. (New) In combination, a decellularized allograft osteochondral plug whose cellular material, chondrocytes, pluripotent mesenchymal cells and proteoglycans have been removed therefrom, said decellularized allograft osteochondral plug including a decellularized subchondral bone portion and a decellularized cartilage cap; and

a cartilage mixture including milled allograft cartilage pieces mixed in a biocompatible carrier, said cartilage mixture being positionable in an annular space located adjacent said decellularized allograft osteochondral plug and extending along substantially the entire length thereof, wherein said cartilage mixture is present in a quantity and location sufficient for promoting chondrocyte migration into and proliferation within said decellularized cartilage cap and for enhancing tissue integration between said decellularized allograft osteochondral plug and the patient's tissue.

85. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug is lyophilized.

86. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug has a water content within a range of about 0.1% to about 8%.

87. (New) The combination of Claim 84, wherein said milled cartilage mixture comprises cartilage pieces having a size less than 1 mm.

88. (New) The combination of Claim 84, wherein said biocompatible carrier comprises sodium hyaluronate.

89. (New) The combination of Claim 84, wherein said biocompatible carrier comprises gelatin.

90. (New) The combination of Claim 84, wherein said biocompatible carrier comprises collagen.

91. (New) The combination of Claim 84, wherein said biocompatible carrier comprises chitosan.

92. (New) The combination of Claim 84, wherein said biocompatible carrier comprises alginate.

93. (New) The combination of Claim 84, wherein said biocompatible carrier comprises phosphate buffered saline (PBS).

94. (New) The combination of Claim 84, wherein said biocompatible carrier comprises Dextran.

95. (New) The combination of Claim 84, wherein said biocompatible carrier comprises polymers.

96. (New) The combination of Claim 84, wherein said decellularized allograft plug has a cylindrical shape.

97. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug has a diameter in a range of 1 mm to 30 mm.

98. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug has a diameter in a range of 4 mm to 10 mm.

99. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug has an oval cross-sectional shape.

100. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug has a cruciate cross-sectional shape.

101. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug has a scalloped cross-sectional shape.

102. (New) The combination of Claim 84, wherein said milled cartilage mixture comprises hyaline cartilage pieces.

103. (New) The combination of Claim 84, wherein said milled cartilage mixture comprises fibrocartilage pieces.

104. (New) The combination of Claim 84, wherein said milled cartilage mixture comprises fibrocartilage pieces and hyaline cartilage pieces.

105. (New) The combination of Claim 84, wherein said milled cartilage mixture comprises growth factors.

106. (New) The combination of Claim 84, wherein said space substantially surrounds said decellularized allograft osteochondral plug, whereby said decellularized allograft osteochondral plug does not touch the patient's tissue that has been exposed as a result of the formation of the bore.

107. (New) The combination of Claim 84, wherein said decellularized allograft osteochondral plug has an outer periphery having a size and shape selected to allow said decellularized allograft osteochondral plug to be inserted into a bore formed in a cartilage defect area of a patient, and wherein said annular space has an outer extremity defined by the bore and an inner extremity defined by said outer periphery of said decellularized allograft osteochondral plug.

108. (New) The combination of Claim 107, wherein said inner extremity of said annular space has a first diameter, and said outer extremity of said annular space has a second diameter that is greater than said first diameter.

109. (New) The combination of Claim 107, wherein said outer periphery of said decellularized allograft osteochondral plug has a cylindrical shape.

110. (New) The combination of Claim 107, wherein said outer periphery of said decellularized allograft osteochondral plug has a non-cylindrical shape.

111. (New) The combination of Claim 107, wherein said outer and inner extremities of said annular space cooperate with a bottom surface of the bore to form a containment chamber for said cartilage mixture.